The Sine Law (2 formats) for Δ ABC:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

or

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

The Cosine Law (2 formats) for Δ ABC:

$$a^2 = b^2 + c^2 - 2bc\cos A$$

or

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

The Sine Law only works when we have certain combinations of sides and angles.

The Cosine Law provides different combinations that can be used to solve a triangle.

L9 When to Use Sine Law or Cosine Law

Use the Sine Law given:

- two sides and an angle to find a second angle (SSA).

- two angles and a side to find a second side (SAA).

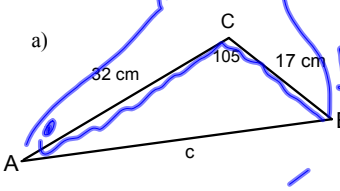
Use the Cosine Law given:

- two sides and the contained angle to find the third side (SAS).

- three sides, and find any angle (SSS).

Ex.1 Which law would you use to solve for the indicated angle or side in each of the following triangles?

a)

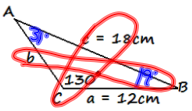


$c^2 = 32^2 + 17^2 - 2(32)(17)\cos 105$

$c^2 = 1594.595$

$c \doteq 39.9$

b)



$\frac{\sin A}{1.2} = \frac{\sin 130°}{1.8}$

$\sin A = \frac{1.2\sin 130°}{1.8}$

$A = \sin^{-1}\left(\frac{1.2\sin 130°}{1.8}\right)$

$A \doteq 31°$

$\frac{b}{\sin 19°} = \frac{1.8}{\sin 130°}$

$b = \frac{1.8\sin 19°}{\sin 130°}$

$b \doteq 0.8$

Assigned Work:

p. 449 #1, 2, 3
Worksheet